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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,947	09/22/2003	Jonah A. Harley	10010746-1	5721

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EXAMINER

TAMAI, KARL I

ART UNIT PAPER NUMBER

2834

DATE MAILED: 08/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/664,947

Applicant(s)

HARLEY ET AL.

Examiner

Tamai I.E. Karl

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Oath/Declaration

1. The objection to the oath is withdrawn.

Claim Objections

2. Claims 3-5 are objected to because of the following informalities: Claims 3-5 are vague and indefinite because they depend from the cancelled claim 2. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The rejection of Claim 1-5, 7, 9, 14-17, 22, 23 under 35 U.S.C. 102(b) as being clearly anticipated by Higuchi et al. (Higuchi)(JP 07-274540) is withdrawn.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

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under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 3-7, 9, 14-17, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi et al. (Higuchi)(JP 07-274540), in further view of Suzuki et al. (Suzuki-916)(US 5869916). Higuchi teaches a comb actuator (figure 2) having opposing combs 100 and 200 with electrodes on the surface of the combs (covered with insulation 321, 322 for protection). The electrodes forming repeating arrays of U, V, and W electrodes which receive power from conductors. The stationary teeth 110, 111 (first and third member) being opposed to a third tooth teeth 201 (second member), with electrodes mounted on the surface of the tooth (see figure 3) with an alternating voltage pattern applied to the electrodes. Higuchi teaches every aspect of the invention, as discussed above, except the discrete voltage patterns and intermediate voltages. Suzuki-916 teaches an DC (discrete) driving voltages and intermediate driving voltage to smooth the movement of the mover (see figure 9). It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the actuator of Higuchi with the intermediate driving voltages of Suzuki-916 to provide a smooth movement of the mover.

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7. Claims 8, 10-12, and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi et al. (Higuchi)(JP 07-274540) and Suzuki et al. (Suzuki-916)(US 5869916), in further view of Suzuki et al. (Suzuki-987)(JP 08-186,987). Higuchi teach every aspect of the invention, as discussed above, except each second conductor connected to every other second electrode or the stator electrode connected to every other electrode, the first and second electrodes having different pitches/electrodes per distance (see figure 2), or the first electrodes are set high and low while the other electrodes are changing from low to high and high to low (see figure 3). Suzuki-987 teaches each first or second conductor connected to every other second electrode to provide enhanced driving force. Suzuki-987 teaches the equivalence to the electrodes driven by a two phase or three phase source. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the actuator of Higuchi and Suzuki 916 with the conductors connected as every other or every three and driven with the DC voltage pulses to provided enhanced driving force, as taught by Suzuki 987.

8. Claims 13 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi et al. (Higuchi)(JP 07-274540) and Suzuki et al. (Suzuki-916)(US 5869916), in further view of Hoen et al. (Hoen)(US 5986381). Higuchi and Suzuki teach every aspect of the invention, as discussed above, except suspension compliant in one direction and stiff orthogonal to the direction of travel. Hoen teaches flexure suspension compliant in one direction and stiff orthogonal to the direction of travel are commonly

used for MEMS actuators. It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the actuator of Higuchi with the flexure suspension to provide an appropriate range of motion for the linear electrostatic actuator.

Response to Arguments

9. Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new grounds of rejection. Applicant's arguments regarding the use of discrete (DC) voltages is not persuasive. Suzuki 916 teaches the used of discrete voltages (DC) to provide smooth motion of the actuator by using discrete voltage patterns. The combination is supported by Hoen et al. (US 5986381) (col. 20, lines 20-25), Hirose et al. (US 6472795) which teaches that electrostatic actuators can be driven by alternating or discrete voltage patterns (see figures 6a or 6b), and Nishiguchi et al. (JP 4-271,284) which teaches that discrete voltage patterns allow precise control of the mover. Applicant's arguments regarding parallel plate actuators is not persuasive because the teeth of the Applicant's invention are parallel plate actuators.

Conclusion

10. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl I.E. Tamai whose telephone number is (571) 272 - 2036. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Darren Schuberg, can be reached at (571) 272 - 2044. The facsimile number for the Group is (571) 273 - 8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Karl Imayoshi Eizo Tamai
PRIMARY PATENT EXAMINER
August 13, 2005

KARL TAMAI
PRIMARY EXAMINER

